

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT INVESTIGATIONS

MEMORANDUM: MR. J. J. FARRELL

Re: Data to be Secured - Minidoka Survey

by
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Forest Insect Laboratory
Coeur d'Alene, Idaho
August 31, 1937

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The number of infested trees per unit of area is not always an indication as to the need for the institution of control. This is especially true when epidemics of the mountain pine beetle have been reduced by artificial measures to scattered individuals and small groups of infested trees. Though the number of infested trees depicts the insect population, such data do not provide information relative to the potential power of these scattered trees to rebuild the infestation to its former severity, which should be the determining factor relative to the need for control. Such information can only be secured from data relative to the character of the attacks and the resulting broods, as well as the class of the trees being infested. This information, with the number of infested trees to be treated, provides a fairly clear criterion as to the need for the institution of control.

It is recognized that if heavy infestations are encountered, the securing of detailed data from all infested trees will not be practicable nor necessary. When such infestations are encountered, data from 10 or 12 representative trees will serve to depict the actual status. With areas of scattered infestation, where only a few trees are encountered each day, the securing of these additional data

will not entail too great an additional burden. This year's survey of the Minidoka should show the 1937 infestation to be much lighter than the already reduced infestation that was present on the forest in 1936. If this premise is correct, there will be areas where the continuation of maintenance control as conducted during the past season will be questionable. In order to eliminate such border-line areas, it is trusted that it will be possible to secure the following data during the course of the Minidoka survey.

1. Number of 1937-attacked trees per acre sample strip
2. Density of attack
3. Height of attack
4. Pitched-out attacks
5. One-sided attacks
6. Character of brood
7. Character of the trees attacked

A description of the items follows:

1. Number of 1937-Attacked Trees Per Acre of Sample Strip. The density of attacks is usually a good indication of the character of an infestation, though the potential danger of scattered, infested trees is often underestimated. This information is the regular data secured in connection with the survey.
2. Density of Attack, as indicated by the number of individual attacks

per square foot of bark surface. This information is rather quickly secured by estimating a square foot of bark surface which represents an average condition on which the pitch tubes are counted.

3. Height of Attack. This information is often difficult to secure, as with severe attacks one can not observe pitch tubes above 15-20 feet. However, light attacks usually show larger tubes which can be seen to the height of attack. A few scattered pitch tubes at a height of 15-20 feet indicate a light attack at that point. Though this information is not easily secured, one's reaction to the average height of attack is beneficial.
4. Pitched-out Attacks. Pitched-out or unsuccessful attacks are usually indicated by large pitch tubes on the lower portion of the bole. This is not an infallible rule, and one should check such trees by a more intensive examination before making a decision. The number of pitch tubes per square foot of bark surface can not always be taken as an indication of the success of an attack. A heavy concentration of beetles, with large pitch tubes will nearly always indicate an unsuccessful attack. A fairly constant rule which one may follow is the lack of fine boring dust at the base of trees which have been unsuccessfully attacked. There is sometimes a coarse boring frass at the base of such trees.
5. One-sided Attacks. One-sided attacks can be recognized by the

absence of pitch tubes or boring dust on the one side. One-sided attacks are often encountered in connection with groups of infested trees, and with such situations they have but little significance relative to the character of the infestation. The occurrence of scattered, one-sided attacks, which are seldom very heavy, is an indication of a reduced insect population associated with a weakened infestation approaching or depicting a normal condition.

6. Character of Brood. Though the "Density of Attack" shows the number of beetles which have attacked each tree, it is not indicative of the number of insects which will develop from the resulting broods. By removing a piece of bark one will secure a visual reaction to the character of the brood, which can be classified as heavy, medium, and light. It is difficult to set up established rules for these three classifications without requiring a count of larvae per unit of area, which is prohibitive because of the time required. One's reaction to the brood is rather easily and quickly secured. In addition to the large number of larvae associated with heavy broods, one will find the bark to be fairly easily separated from the wood if the larvae are fairly well developed. The pitch tubes will be small or entirely absent, and fine, brown boring dust will be plentiful around the base of the tree. Opposite conditions will be associated with light broods, while a gradation between the two extremes will depict medium broods. In some trees, though the

attack has been successful in so far as the construction of egg galleries is concerned, no brood has followed. Such conditions will be readily recognized by the pitchy condition of the wood along the sides of the galleries. It is believed that the effect of this pitch prevents the eggs from hatching.

7. Character of Trees Attacked. An indication of the aggressiveness of an infestation can be secured by the character of the trees which are selected for attack. During epidemics of the mountain pine beetle there is but little, if any, attention given to the character of the tree attacked. However, during decreasing or normal infestations the less-resistant trees are always selected. Data relative to the size, vigor, presence of mistletoe, as well as any previous injury, will serve to illustrate the character of the trees being attacked, which will be a reflection of the aggressiveness of the existing infestation.

I have prepared a sample form for the recording of these data which is the same size as the strip sheets. This form could be carried in the tatum holder behind the strip sheets. I have filled out this form with fictitious data as the best means of explaining the legends which are used. I would have been glad to have mimeographed a quantity of these forms for you, but I am sure you must have better equipment than is available at this laboratory. Trusting that these suggestions will meet with your approval, I remain

Very truly yours,

James C. Evenden
Entomologist

cc to Mmudoka +

Date _ _ _ _ _

Location _ _ _ _ _

Strip Sheet No. _ _

Tree		per	of	P.O.	Att.	Character	D.B.H.	Tree classification			
number	sq. ft.	ft.	attack	O.S.	Att.	of brood	height	Crown	Vigor	Remarks	
1	4	10	-		(L)ight	10-75	(D)ominant	(P)ointed	(G)ood		
2	10	30	-		(H)eavy	12-85	(D)ominant	(R)ound	(F)air		
3	11	25	-		(M)edium	10-55	(S)uppressed	(F)lat	(P)oor	Mistletoe	
4	9	35	-		H	12-80	D-P		G		
5	3	15	P.O.		-	12-80	D-R		G		
6	10	40	-		H	14-90	D-R		F		
7	8	20	O.S.		L	8-50	(C)odominant	R	P		
8	9	35			M	10-50	(I)ntermediate	F	P	Porky injury	
9	10	40			H	12-90	C-R		P	Top-killed 1936	
10											